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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/074,151	02/11/2002	Su-Chen Fan	JCLA5041-CA2	1029

7590 10/31/2003

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EXAMINER

VERSTEEG, STEVEN H

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 10/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

cb8

Office Action Summary	Application No.	Applicant(s)	
	10/074,151	FAN, SU-CHEN	
	Examiner	Art Unit	
	Steven H V rSteeg	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-7,9 and 11-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5 and 6 is/are rejected.
- 7) ☒ Claim(s) 4,7,9 and 11-13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/417,357.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: the status of the parent application needs updated on page 1.

Appropriate correction is required.

2. The amendment filed October 9, 2003 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: the matter inserted into the paragraph beginning on page 6 at line 5 and the paragraph beginning on page 7 at line 9.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Objections

3. Claims 4-7, 9, and 11-13 are objected to because of the following informalities: "pm" should be "pre" in claim 4 at line 3. Claims 5-7, 9, and 11-13 depend from claim 4 and contain all of the limitations of claim 4. Therefore, claims 5-7, 9, and 11-13 are objected to for the same reasons as claim 4. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 5 and 6 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one

Art Unit: 1753

skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 5 and 6 contain new matter. Specifically, the limitation "substantially higher than the second bias" in claim 5 and performing the metal film formation and the dry cleaning and amorphizing in "different chambers" for claim 6 could not be located in the specification as originally filed and are thus considered to be new matter.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,360,765 to Kondo et al. (Kondo) in view of US 5,178,739 to Barnes et al. (Barnes) and Applicant's admitted prior art.

8. For claim 1, Applicant requires a method for treating a silicon substrate comprising: placing the substrate into a sputtering chamber, performing a sputtering step to simultaneously dry clean and amorphize the substrate surface using a first sputtering chamber, and in situ depositing a titanium film on the amorphized silicon substrate by using the same chamber wherein the sputtering chamber is an ionized metal plasma equipment. For claim 2 Applicant requires the titanium film to be deposited at about 540°C.

9. Kondo discloses a method for forming electrodes (abstract). The method involves providing a silicon substrate 1. The substrate is processed in a sputtering system (Figure 2). The system contains a chamber 23. In the chamber, there is an etching station 13 and a sputtering

Art Unit: 1753

station 15 for forming titanium (col. 4, l. 56-58). At the etching station, the silicon substrate is subjected to argon gas to dry-clean the substrate and amorphize the silicon by sputtering (col. 4, l. 33-55). As can be seen from Figure 2, both processes are performed in the same sputtering chamber 23. Kondo indicates that the titanium is deposited at a temperature of about 500°C, which is about 540°C.

10. Kondo does not indicate that the argon is ionized and that titanium atoms sputter from the target and deposit on the substrate (col. 4, l. 63-67). Therefore, Kondo does not teach IMP.

Kondo also does not teach in situ deposition.

11. Barnes discloses that when sputtering, it is advantageous to utilize an RF coil in the chamber because it will result in a high density plasma and ionize sputter neutrals which allows the plasma to be more evenly distributed throughout the chamber (col. 2, l. 59-63). The benefit of an evenly distributed plasma is that the uniformity of the deposition can be controlled (col. 3, l. 1-3).

12. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Kondo to utilize a coil in the chamber because of the desire to control the uniformity of deposition. The use of the coil will result in IMP.

13. Applicant's admitted prior art shows that conventionally, the deposition in the same chamber is performed in situ (pages 1-3 of the specification).

14. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Kondo to perform the deposition in situ in the same chamber because of the desire to perform the deposition in the manner conventional within the art.

Art Unit: 1753

Double Patenting

15. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

16. Claim 1 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 4 of U.S. Patent No. 6,254,739 B1 in view of Applicant's admitted prior art. The only difference between the claims is that the claim of the application does not require the specifics of the bias and the steps after the titanium layer is formed. Also, claim 4 of the patent does not claim in situ deposition. However, all of the limitations of claim 1 of the application are present in claim 4 of the patent except for the in situ deposition. Applicant, in their admitted prior art, has disclosed that it is conventional in the art to provide the deposition in situ. Therefore, claim 1 of the application is obvious.

Response to Amendment

17. The objection to the specification presented in the office action mailed April 10, 2003 stands. Applicant has not updated the status of the parent application. Please insert the patent number.

18. The 112-first paragraph rejection of claims 5 and 6 presented in the office action mailed April 10, 2003 stands.

Art Unit: 1753

19. The 103(a) rejection of claims 1 and 2 over US 5,360,765 to Kondo et al. (Kondo) in view of US 5,178,739 to Barnes et al. (Barnes) is withdrawn in light of the amendment, but a new rejection is presented above that was necessitated by the amendment.

20. The 101 double patenting rejection of claim 10 in the office action mailed April 10, 2003 is withdrawn in light of the cancellation of the claim.

21. The obviousness type double patenting rejection of claim 1 presented in the office action mailed April 10, 2003 is withdrawn in light of the amendment, but a new rejection is presented above that was necessitated by the amendment.

Allowable Subject Matter

22. Claims 4, 7, 9, and 11-13 would be allowable if written to overcome the claim objection presented above.

Response to Arguments

23. Applicant's arguments filed October 9, 2003 have been fully considered but they are not persuasive.

24. Applicant has argued that reciting that "the first bias is about 250W to about 450W" and "the second bias is about 150W to about 300W" inherently shows that the first bias is "substantially higher" than the second bias. I disagree. The most that it shows is the separate values possible. Your limitation is much broader than that. You cannot say that disclosing a second bias of 150W and a first bias of 450W provides support for all situations such as, for example, a second bias of 1W and a first bias of 1000W. Admittedly, you have not claimed the exact values of 1W and 1000W. I am just using those numbers as an example, but your claim would in fact cover such a situation. You do not have support in the specification for such a

Art Unit: 1753

situation. The most that you have support for is the values you have already mentioned in your arguments. Also, inserting the words “substantially higher” into the specification is new matter. You will need to cancel the new matter before the application can be allowed.

25. Applicant has also argued that the phrase “step 450a is performed to deposit a conformal metal film 208 over the substrate 200 in an IMP chamber, PVD chamber, or the like. This deposition step 450a can be alternatively performed by a BDS technique, or by TiCl₄-based chemical vapor deposition (CVD)” provides support for the claim limitation that the dry cleaning and amorphizing can be performed in different chambers. I disagree. The above phrase shows **ALTERNATIVE** situations. In other words, step 405a can be performed in an IMP chamber **OR** a PVD chamber **OR** the like **OR** a BDS technique chamber **OR** a TiCl₄-based CVD chamber. Admittedly, those chambers are different, but that merely shows that those are alternative situations to perform the same step. It does not show that different steps (i.e. dry cleaning and amorphizing as a step and forming the metal film as a step) can be performed in separate chambers. Your reference to the specification provides support for different chambers to perform the same step, not different chambers to perform different steps. You have claimed different chambers to perform different steps. Therefore, your claim contains new matter. Also, inserting the limitation from the claim into the specification is new matter. The new matter in the specification must be canceled before the application can be allowed.

General Information

For general status inquiries on applications not having received a first action on the merits, please contact the Technology Center 1700 receptionist at (703) 308-0661.

Art Unit: 1753

For inquiries involving Recovery of lost papers & cases, sending out missing papers, resetting shortened statutory periods, or for restarting the shortened statutory period for response, please contact Palestine Jenkins at (703) 308-3521.

For general inquiries such as fees, hours of operation, and employee location, please contact the Technology Center 1700 receptionist at (703) 308-0661.

Special Notice Regarding PTO Relocation to Alexandria, Virginia

During December 2003, the USPTO will begin its relocation to the Carlyle facility in Alexandria, Virginia. I am scheduled to move at some point in December 2003. At that time, my phone number will change. My new phone number will be (571) 272-1348. If you need to speak with me during December 2003, I recommend first calling my old area code 703 phone number. If that number has been disconnected, then try the new area code 571 phone number. Beginning January 2003, please discontinue use of the area code 703 phone number.

Conclusion

26. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

Art Unit: 1753


however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven H VerSteeg whose telephone number is (703) 305-4473.

The examiner can normally be reached on Mon - Thurs (7:30 AM - 6:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X Nguyen can be reached on (703) 308-3322. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


Steven H VerSteeg
Primary Examiner
Art Unit 1753

shv
October 30, 2003